THE EFFECTS OF COGNITIVE COMPETENCE AND ANXIETY ON DEPRESSION IN AN ELDERLY SAMPLE: A CLINICAL ASSESSMENT SCALES FOR THE ELDERLY (CASE) DATA ANALYSIS

A Dissertation

by

KELLY GENE ARNEMANN

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2007

Major Subject: Counseling Psychology

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ABSTRACT

The Effects of Cognitive Competence and Anxiety on Depression in an Elderly Sample: A Clinical Assessment Scales for the Elderly (CASE) Data Analysis. (August 2007)

Kelly Gene Arnemann, B.A., Knox College; M.S., Barry University

Co-Chairs of Advisory Committee: Dr. Michael Duffy
Dr. Cecil Reynolds

This study investigates the impact of self- and other-report cognitive competence, anxiety and obsessive-compulsive behaviors on depression using a population sample from the archival data of the Clinical Assessment Scales of the Elderly (CASE).

Structural Equation Modeling was used to test predictions of the abovementioned variables. Participants were a matched self-and other-report subset (N=123) of the CASE standardization sample (N=2,000). Structural equation modeling was used to test predictions.

The results revealed that age does not predict self-report cognitive competence or other-report cognitive competence. A small covariance (0.42) was found between the errors of self-report cognitive competence and other-report cognitive competence. The data reports self-report depression mediates both self-report anxiety and self-report obsessive compulsive behaviors. Statistically significant large effects were found between self-report cognitive competence and all variables; self-report anxiety (0.72), self-report depression (0.62), and self-report obsessive compulsive behaviors (0.71). Moderate to large effects were found for other-report cognitive competence and all variables; other-report anxiety (.063), other-report depression (0.63), and other-report

obsessive compulsive behaviors (0.35). The correlations between the anxiety and depression measures confirm the current literature regarding depression and anxiety.

In this study depression has been found to have a mediating effect on both anxiety and obsessive compulsive behaviors in an elderly sample. The inclusion of obsessive compulsive behaviors as a measure of anxiety in this model has empirically demonstrated the variability of the presentation of depression. Psychological self-report measures continue to be the best determinant of a patient's internal functioning. Research in the area of the presentation of depression in the elderly merits further investigation.

DEDICATION

To Miguel Antonio Ybarra, Ph.D., thank you for your love and support because without you I never would have had this dream. I am grateful.

ACKNOWLEDGMENTS

I would like to thank Dr. Cecil Reynolds for the opportunity to explore the data that he acquired for the creation of the CASE. Without his vision of this instrument and his work, I would not have been able to accomplish my goal. Dr. Duffy, thank you for your guidance in my academic career. Thank you also to Dr. Davenport, Dr. Willson and Dr. LeUnes. In addition to your scholarly work, you have left an impression on my life and work greater than you can know. Thank you for believing in my promise. I am grateful.

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CHAPTER I

INTRODUCTION

Understanding the world view of elderly individuals in the United States is critical to elucidating the development of depression in this population. Depression is expected to become the second leading cause of disability worldwide by 2020 (Judd, Akiskal, Zeller, Paulus, Leon, Maser, Endicott, Coryell, Kunovac, Mueller, Rice, & Keller, 2000). Depression can result in negative effects on recovery from various medical conditions (Hays, Wells, Sherbourne, & Rogers, 1995; Simonsick, Wallace, Blazer & Berkman,1995; Katon, 1996; Bosworth, Steffens, Kuchibhatla, Jiang, Arias, O'Connor, & Krishnan, 2000), on daily living activities (Bruce, Seeman, Merrill, & Blazer, 1994; Steffens, Hays, & Krishnan, 1999), use of hospitalization (Brummett, Babyak, Barefoot, Bosworth, Clapp-Channing, Siegler, Williams, & Mark, 1998), and quality of life (Bosworth, et al., 2000). In addition, depression is common in elderly medical patients and is associated with increased morbidity (Rovner, German, Brant, Clark, Burton, & Folstein, 1991; Parmalee, Kleban, Lawton, & Katz, 1992; Bruce et al., 1994; Bosworth, Siegler, Brummett, Barefoot, Williams, Clapp-Channing, & Mark, 1999). The rate of major depression in community-dwelling adults is estimated to be less than 1% (Regier, Boyd, Burke, Jr., Raes, Myers, & Kramer 1988), but when hospitalized elders and subsyndromal depression patients are included, prevalence estimates range from 10-35 % (Koenig & Blazer, 1982; Koenig, O'Connor, Guarisco, & Zabel, 1993).

This dissertation follows the style of *Psychology and Aging*.

Depression among the elderly is a potentially preventable source of death and disability which warrants further investigation.

Another aspect associated with depression that is often examined is anxiety. However, even after twenty years of study (Emery & Oxam, 1992; Kral, 1983), we remain unable to better define potential factors related to depression and anxiety. Population-based studies of depression and anxiety in older adults suggest that up to 26% of those people aged 65 and above have anxiety symptoms (Mehta, Simonsick, Penninx, Schulz, Rubin, Satterfield, & Yaffe, 2003). As researchers continue to observe and report the relatively high prevalence of psychological distress of the elderly, there remains a dearth of knowledge regarding the experience, presentation and assessment of anxiety in later life.

A third variable of interest to psychologists is the cognitive competence of older adults. There have been a number of studies that addressed multiple psychosocial variables with regard to cognitive competence. In general, findings suggest that there is great potential benefit from identifying potentially malleable risk factors contributing to cognitive decline. A better understanding of the risk factors leading to future cognitive decline could make more effective intervention strategies possible.

While a number of studies have examined the relationships between depression and cognitive competence as well as depression and anxiety, none have examined the relationships between the three variables of depression, anxiety, (obsessive compulsive behavior as a measure of anxiety), and cognitive competence which is the proposed purpose of this study.

Statement of the Problem

The present study was conducted to explore the effects of cognitive competence and anxiety on depression in the elderly. The study examined the relationship of cognitive competence, anxiety, and obsessive compulsive behaviors with depression by examining the archival data available from the Clinical Assessment Scales of the Elderly (CASE). It was hypothesized that the data will demonstrate that there is an AGE effect with cognitive competence. It was also hypothesized that anxiety will mediate the relationships between cognitive competence and depression. Studying these interactions may offer meaningful interventions, advance theoretical content, add a new perspective to the existing body of literature a new perspective and offer direction for future research. The following research questions were addressed as a part of this study:

Research Question 1: What is the relationship between age and cognitive competence?

Research Question 2: What is the relationship between anxiety and obsessive-compulsive behavior with depression?

Research Question 3: What is the relationship between cognitive competence and depression as mediated by anxiety?

Research Question 4: What is the relationship between:

a. Self-report cognitive competence and other-report cognitive competence?
b. Self-report depression and other-report depression?
c. Self-report anxiety and other-report anxiety?

d. Self-report obsessive-compulsive behavior and other-report obsessive-compulsive behavior?

Research Question 5: What is the relationship between:

a. Cognitive competence and depression?

b. Cognitive competence and anxiety?

c. Cognitive competence and obsessive-compulsive behaviors?

Research Question 6: What is the pattern of interrelationships among the variables?

The proposed Structural Equation Model (SEM) of the CASE data is shown below as Figure 1.

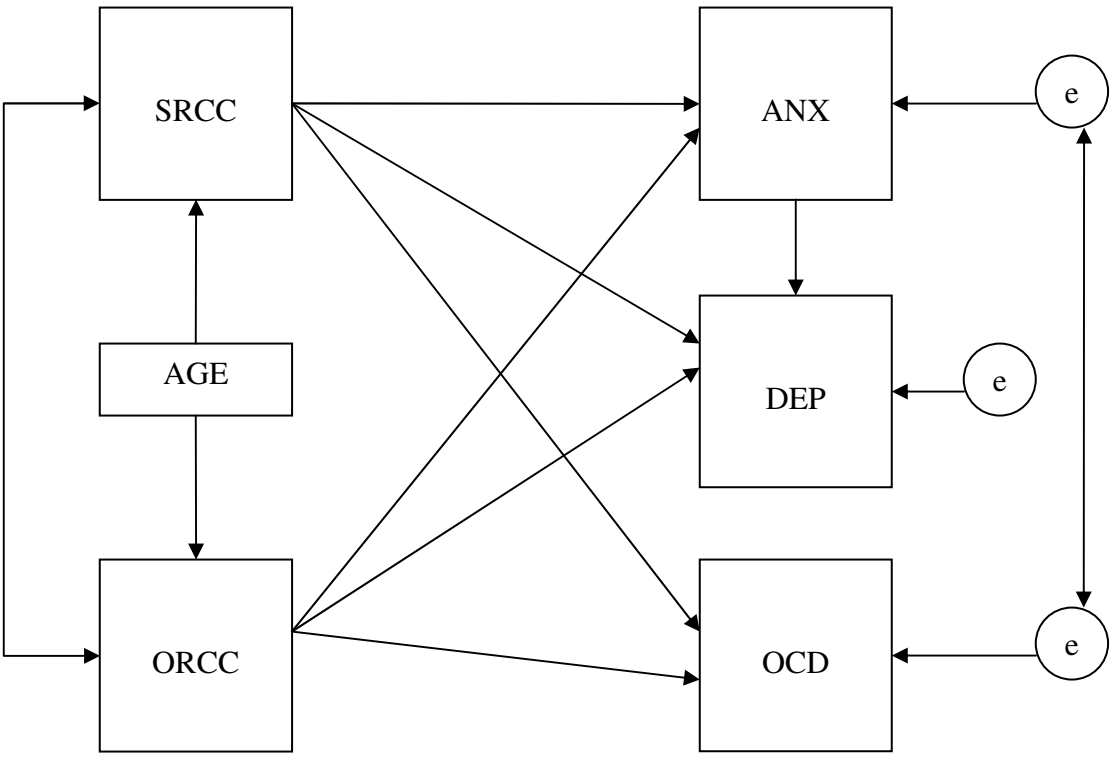

Figure 1. Proposed Structural Equation Model (SEM) of CASE Data

Definition of the Terms

This study will focus on the correlation of four scale variables: 1.) cognitive competence, 2.) anxiety, 3.) obsessive compulsive, and 4.) depression. More specifically, it was investigated as to how cognitive competence, anxiety, obsessive-compulsive behaviors may impact upon depression. The operational definitions of the variables, as used in the Clinical Assessment Scales for the Elderly (CASE) Professional Manual for the CASE and CASE-SF (2001) follow: "The ANXIETY (ANX) scale is designed to assess a generalized sense of apprehension, a vague sense of fear and related irrational beliefs, worry, nervousness, and related general symptoms of anxiety and anxiety-related disorders" (Professional Manual for the CASE and CASE-SF, p. 19, 2001). The OBSESSIVE – COMPULSIVE scale (OCD) "is designed to assess the tendency to engage in non-productive, ruminative thought patterns with focused patterns of irrational worry and related phenomena" (p.22). Because OCD behaviors tend to be a byproduct of anxiety, this study will treat both scales as indicators of anxiety.

The COGNITIVE COMPETENCE (COG) scale "is designed to assess impairments of higher cognitive processes such as reason, attention and concentration, memory, and logical thought." (p.19). The DEPRESSION (DEP) scale "is designed to assess indications of depressed mood, general dysthymia, sadness, melancholy, feelings of helplessness, fatigue, and some cognitive symptoms that may accompany major depressive episodes. (p.20). While cognitive competence, anxiety, and depression in the elderly have been discussed extensively in the literature; the interrelationships of the four variables have not.

CHAPTER II

REVIEW OF THE LITERATURE

In recent years, older individuals have made up an increasing percentage of the United States population (U.S. Census, 2000). In response to this demographic shift, psychologists have attempted to better understand the physiological as well as psychological changes in the elderly.

Cognitive Competence in the Elderly

Summary of the Literature

The prevalence of cognitive impairment in the elderly ranges from 16.8% to 26.6% in the general population (Hanninen, et al., 1996; Graham, et al., 1997; Schroeder et al., 1998; Ritchie, et al., 2001; Unverzagt, et al., 2001; Bierman, E. Comijs, H., Jonker, C., & Beekman, A., 2005). Ganguli, Du, Dodge, Ratcliff, and Chang (2006) in their twelve-year prospective epidemiological study of 1,265 older adults found that depressive symptomotology was associated with cognitive impairment, but not subsequent cognitive decline. They also state that in their sample significant declines in cognitive functioning are most likely a result of dementia and cannot be explained by depression alone. Chi & Chou (2000) extensively discuss the previous research done in the field of depression and cognitive performance. The deterioration of performance of cognitive tasks during aging is well documented (Schaie, 1983; Schaie & Willis, 1993) although individual differences in these cognitive abilities are the rule rather than the exception (Schaie, 1990). Several studies have also addressed various psychosocial variables such as education (Schaie, 1990; Anstey, Stankov, & Lord, 1993; Avolio &

Waldman, 1994), good health (Perlmutter & Nyquist, 1990), personality (Hayslip, 1988), regular exercise (Stone & Kozma, 1988; Clarkson-Smith & Hartley, 1990), social status (Arbuckle, Gold, & Andres, 1986), and social support (Arbuckle, Gold, Andres, Schwartzman, & Chaikelson, 1992) on cognitive competence. These studies found that there is great potential benefit from identifying risk factors contributing to cognitive decline, especially those that are potentially malleable. A better understanding of risk factors leading to future cognitive decline could make more effective intervention strategies possible.

Many individuals may exhibit only limited insight into the extent of their cognitive decline (Derouesne, Thibault, Lagha-Pierucci, Bauudouin-Madec, Ancri, & Locomblez, 1999) and this decline is often unrecognized by the individual's family (Cutler & Hodgson, 1996; Doraiswamy, Steffens, Pitchumoni, & Tabrizi, 1998; Derouesne et al., 1999). As a result of this memory loss, a person often becomes depressed or anxious (Schmand, Jonkers, Geerlings, & Lindeboom, 1997; Harwood, Barker, Ownby, & Duara, 2000; Clarnette, Almeida, Forstl, Paton, & Martins, 2001). The importance of identifying predictors of depression and anxiety has become more relevant since cognitive decline has an extended latent period and the ability to diagnose and start treatment in the early stages has improved (Collie & Maruff, 2000; Visser, Verhey, Ponds, Kester, & Jolles, 2000). This mild cognitive impairment (MCI) is defined as subjective memory complaints corroborated by an informant, accompanied by normal cognitive function on screening instruments and normal performance of activities of daily living (ADL), but with objective memory impairment in relation to age and

education, and with an absence of dementia (Petersen, Smith, Waring, Ivnik, Tangalos, & Kokmen, 1999). It has been found that persons with MCI are at greater risk of developing dementia in the future (Bowen, Terri, Kukull, McCormick, McCurry, & Larson, 1997; Christensen, Henderson, Korten, Jorm, Jacomb, & Mackinnon, 1997; Schofield, Marder, Dooneief, & Jacobs, 1997; Friedrich, 1999; Jonkers, Geerling, & Schmand, 2000; Ritchie & Touchon, 2000; Shah, Tangalos, & Peterson, 2000; Cargin, Maruff, Collie, & Masters, 2006). It has also been reported that approximately 20% of those already with MCI have some mild dementia (Milwain, 2000). A recent study of dementia and cognitive impairment by Milwain and Nagy (2005) found that depressive symptoms in the middle stages of Alzheimer's Disease (AD) was significantly related to worse cognitive performance than those elderly individuals in the early or late stages of AD whether or not depressive symptoms were present. With that in mind, it is important to consider memory complaints from individuals in relation to the presence of anxiety, and depression on future cognitive decline.

Forsell, Palmer, and Fratiglioni (2003) reported that anxiety was the only psychiatric syndrome found in those with MCI. Unfortunately, the current screening instruments that we have for cognitive decline are typically not sensitive enough to detect it in the early stages (Collie & Manruff, 2000; Shah et al., 2000).

Devanand, Sano, Tang, Taylor, Gurland, Wilder, Stern, & Mayeux (1996), Jorm, et al. (1997), and Jorm (2000) reported that anxiety and depression occur as a reaction to a decline in cognition rather than being a cause of that decline. Airiksenen, et al. (2004) found that cognitive impairment was also associated with mixed anxiety-depression

disorders considering this as one and the same disorder. Depression has repeatedly been found to be a preclinical predictor of cognitive decline (Alexopoulos, Meyers, Young, Mattis, & Kakuma, 1993; Nussbaum, 1994; Devanand, et al., 1996; Raskind, 1998; van Reekum, Simand, Clarke, Binns, & Conn, 1999; Visser, et al., 2000) but the interaction between future cognitive decline and anxiety has not been studied. Anxiety has also been defined by the DSM-IV TR (American Psychiatric Association, 2000) to include a wide array of disorders, but the majority of older adults tend to suffer from a form of generalized anxiety disorder (GAD) (Beekman, Bremmer, Deeg, van Balkom, Smit, de Beurs, van Dyck, & van Tilburg, 1998). Bierman, et al., (2005) found that mild anxiety symptoms seem to be beneficial whereas severe anxiety negatively influences cognitive performance. They report a curvilinear relationship between symptoms of anxiety and cognitive performance thereby supporting the Yerkes & Dodson Law (1908) which states that there exists an inverted u-shaped relationship between arousal and cognitive performance. Arousal states above or below the optimal stress or arousal state results in a drop in performance level (Mendl, 1999).

Anxiety in the Elderly

Summary of the Literature

One of the most common psychological disorders among the elderly in the United States is anxiety (Iwamasa & Hilliard, 1999). According to Byrnes (2001) nearly 20% of older adults experience some anxiety symptoms. Spielberger & Rickman (1990, p. 69) defined anxiety as an "unpleasant state or reaction that is distinguished from other states by a unique combination of experiential qualities and physiological changes."

Feelings of uneasiness, apprehension, and tension can also be included in the definition of anxiety (Beck & Stanley, 1997, 2002; Smith, Sherrill & Colenda, 1995; Spielberger & Rickman, 1990). Population-based studies of older adults report that up to 26% of those people aged 65 and above have anxiety symptoms (Mehta, et al., 2003). The prevalence rate of anxiety in adults over the age of 65 is between 0.7% and 12.0% (Beekman, et al., 1998). As we continue to observe and report the relatively high prevalence of psychological distress of the elderly, there still remains a dearth of knowledge of the experience, presentation and assessment of anxiety in later life.

The prevalence rates of anxiety in older adults may be underestimated secondary to several factors (Beck & Stanley, 1997). According to some researchers how anxiety presents in older adults is different from other adult populations (Kogan, Edelstein, & McKee, 2000; Lowe, 2000; Lowe & Reynolds, 2000, 2004, 2006) and these differences should be addressed by creating sensitive instruments for specific age groups in order to avoid misdiagnoses in older adults (Kogan et al., 2000). First, the elderly may not be willing to report psychological symptoms (Lasoski, 1986; Oxman, Barrett, Barrett, & Gerber, 1987, as cited in Stanley & Beck, 1998). Second, the prevalence figures for anxiety are based on studies done on community-dwelling older adults who have lower rates of anxiety disorders than those who live in institutions (Bland, Newman & Orn, 1988, as cited in Beck & Stanley, 1998). Third, the Regier, et al. (1988) National Institute of Mental Health Epidemiological Catchment Area study did not consider the prevalence of generalized anxiety disorder (GAD) or post-traumatic stress disorder in the first administration of their survey. When interpreting the results of other

epidemiological studies, it is possible that many older adults may not meet the DSM-IV criteria for anxiety disorders but may be experiencing enough anxiety to disrupt their lives (Fisher & Noll, 1996).

Because the presentation and experience of anxiety in older adults has received so little research attention, researchers are unclear if common screening instruments are valid in this population (Kogan, Edelstein & McKee, 2000). Additionally, anxiety in older adults has been attributed to an insufficient social network (Forsell, 2000). The combination of psychological and medical problems is more common among the elderly than younger adults (Magli & DeLeo, 1984). This higher rate of psychological and medical comorbidity in conjunction with medicinal interventions will often complicate the presentation of anxiety in older adults (Hersen & Van Hasselt, 1993).

Subclinical Depression in the Elderly

Summary of the Literature

Symptoms of depression in adult patients have been expressed as psychological disability, excess use of health services, and suicidal behavior thus magnifying the importance of these symptoms (Broadhead, Blazer, George, & Tse, 1990; Wells, Stewart, Hays, Burnam, Rogers, Daniels, Berry, Greenfield, & Ware, 1989). Observations such as these are important for geriatric psychiatry, because epidemiological studies suggest that the under-diagnosis of major depressive disorders (MDD), as defined by the criteria of the *Diagnostic and Statistical Manual* (DSM), is high (Beekman, Copeland, Prince, 1999; Blazer, et al.,1994). This has been attributed to the failure of many patients in geriatric populations to reach the critical threshold for a

DSM diagnosis of MDD (Caine, Lyness, King, et al., 1994; Chopra, Zubritsky, Knott, Have, Hadley, Coyne, & Oslin, 2005).

In surveys of geriatric populations across community-based (Geiselmann, & Bauer, 2000), primary-care (Lyness, King, Cox, 1999), and long-term care settings (Parmalee, Katz, & Lawton, 1989) it was found that sub-syndromal symptoms of depression are common (Chopra, et al, 2005). The importance of these symptoms to the patient and the health care practitioner cannot be overemphasized. While the research findings recognize the clinical importance of minor depression (Beekman, A., Deeg, D., Braam, A., et al., 1997; Koenig, 1997; Lyness, et al., 1999) the number of individuals with depressive symptomotology, such as complaints of sleep problems, appetite disturbance, low energy or poor concentration, poor performance on measures of cognitive functioning, and significant psychological disability, who do not meet the diagnostic criteria of minor depression remain largely undiagnosed and are at risk of not receiving the appropriate level of services from their health care providers (Williams, Watts, MacLeod, & Matthews, 1997; Davidson, 2000; Chopra, et al., 2005).

Depression in the Elderly

Summary of the Literature

The most common psychological disorder among the elderly in the United States is depression (Iwamasa & Hilliard, 1999). Depression is a common disorder in the elderly and is seen as a major health problem due to being both under diagnosed (Alexopoulos, 1996) and under treated (Oxman, Barrett, Barrett & Gerber, 1990; Katon & Schulberg, 1992; National Institute of Health, 1992; Callahan, Henrie, Dittus, Brater,

Hui & Tierney, 1994;). This is also true of the diagnosis of depression in nursing homes (Rovner, et al., 1991). The difficulties associated with assessing depression in the elderly have been well documented (Bieliauskas, 1993; Blazer, 1997). The complex interrelationship between depression and dementia in older adults is not completely understood (Lichtenberg, Ross, Millis & Manning, 1995; Cole & Bellavance, 1997). While dementia is an organic disorder with poor cognitive functioning as its main symptom, depression is an affective disorder, which can cause cognitive deficits (Forsell & Winblad 1998). Importantly, Bassuk, Berkman, and Wypij (1998) reports that persons who are depressed may have (reversible) cognitive deficits because of attentional and/or motivational problems. A better understanding of the relationship between depression and dementia is needed. In a Swedish study of 1,101 older persons researching differences between variables associated with depression and symptoms of depression in demented and nondemented elderly, Forsell & Winblad (1998) looked at declining health, institutionalization, personal history of depression and disability in daily living as potential factors to be associated with depression (Phifer & Murrel, 1986; Kennedy, Kelman & Thomas, 1990; Harlow, Goldberg & Comstock, 1991; Bruce, Seeman, Merrill & Blazer, 1994; Alexopoulos, Vrontou, Kakuma, et al., 1996) and can lead to first-onset depression in community elderly (Bruce & Hoff, 1994). Of these listed factors, only increased disability in daily living had a statistically significant relationship to depression in both demented and nondemented participants (Forsell & Winblad, 1998).

Several studies have also shown that in depressed individuals the depressive symptoms such as, increased sleep and decreased levels of activity, may be present for years prior to onset (Kivela, Kangas-Saviaro, Pahkala, Kesti & Laippala, 1996). While a previous history of depression is a risk factor (Forsell, 2000; Heun & Hein, 2005), hereditary factors have been reported as less important (Krishnan and McDonald, 1995; Husaini, 1997). A recent study by Heun and Hein (2005) of 1,408 German elderly without current depression found that risk factors for a first depressive episode include age, gender, and subjective memory impairment. Other studies of the elderly have shown depression to be related to an increased need for care due to disability, poor support networks and threatening life events (Rogers, White, Warshaw, Yonkers, 1994; Beekman et al., 1998) as well as living in an institution, having a history of psychiatric concerns and being single (Forsell, Jorm, & Winblad, 1998)

Additionally, age by itself has not been adequately studied in terms of anxiety and depression (Copeland, Dewey, Wood, Serle, Davidson, & McWilliams, 1987; Roberts, Kaplan, Shema, & Strawbridge, 1997). Conversely, Henderson (1972; 1994) suggests that life experiences and a variety of coping mechanisms protect the elderly from psychiatric disorders, especially depression.

Depression and Anxiety in the Elderly

Summary of the Literature

In 1996, 13% of the U.S. population was defined as older adults. By 2030 it is expected that 70 million adults or 20% of the U.S. population will be considered elderly (American Association of Retired Persons and Administration on Aging, 1997). As the

population of older adults steadily increases, mental health professionals need to examine the mental health status of this population (Iwamasa & Hilliard, 1999). While assessing the mental health status of the elderly can be difficult (e.g., Hersen, Van Hasselt, & Goreczny, 1993), it will be incumbent upon us to understand the issues involved in aging with regard to assessment, prevention and intervention for psychological distress among the elderly (Iwamasa & Hilliard, 1999).

The elderly have many unique psychological, social and economic concerns in addition to physiological changes that may predispose them to experience symptoms of both anxiety and depression (Iwamasa & Hilliard, 1999). The research on anxiety and depression indicates that they are highly related (Clark & Watson, 1991; Beekman, de Beurs, van Balkom, et al., 2000; Kessler, Berglund, Demler, et al., 2003; Biringer, Mykletun, Dahl, Smith, Engedal, Nygaard, & Lund, 2005; Smalbrugge, Jongenelis, Pot, et al., 2005). There is also a high comorbidity between anxiety and depression at the individual case level (Barbee, 1998) and especially in late life (Salzman, & Liebowitz, 1991; Kirby, Bruce, Radic, Coakley, & Lawlor, 1997). Among the elderly, depression (Blazer, Hughes, & George, 1987; Fernandez, Levy, Lachar, & Small, 1995) and anxiety are the most common psychiatric problems (Regier, et al., 1988). Depression, anxiety and psychotic symptoms in older adults seem to be associated with a life history of psychological vulnerability (Forsell, 2000). Lenze, et al. (2000) found that depressed elderly patients with lifetime co-morbid anxiety disorders present with more severe somatic symptoms and more suicidal ideation as well as a higher suicide rate (Allgunder & Lavoir, 1993).

Lovibond (1998) has demonstrated the stability of anxiety and depression and Merikangas, Zhang, Avenenvoli, et al. (2003) has found that mixed anxiety-and-depression has a greater stability over time than either disorder alone. DeLuca, Lenze, Mulsant, Butters, Karp, Dew, Pollock, Shear, & Houck (2005) report that onset of anxiety disorders after the age of 55 years was associated with worse cognition at baseline but saw a similar rate of decline in cognition over time as compared to onset of anxiety disorders prior to the age of 55 years. Approximately 50% of the elderly diagnosed as clinically depressed suffer from comorbid anxiety disorders and approximately 25% of patients with anxiety suffer from major depression (Beekman, et al., 2000.) Barbee and McLaulin (1990) have also stated that research studies and clinical experience have demonstrated the importance of studying anxiety in older adults. The *Vitality for Life* Committee, an interdisciplinary group formed to develop a research agenda for older adults specifically mentioned depression and anxiety as being in need of further research attention and funding (Coordinating Committee for the Human Capital Initiative, 1993). A recently published longitudinal study by DeLuca, et al. (2005) found that co-morbid generalized anxiety disorders or panic disorders is associated with a greater decline in memory in late life major depressive disorder. Their data also shows evidence that anxiety disorders with late onset may be associated with cognitive impairment but further study is needed to confirm their findings. The phenomenology of late life psychopathology is currently very limited, but Henderson, Jorm, Korten, Jacomb, Christensen, & Rodgers, (1998), Blazer, Burchett, Service, & George (1991), MacKinnon, Christensen, Jorm, & Henderson, (1994), and Madianos,

Gournas & Stefanis (1992) found in later studies that the symptomatology of depression and anxiety lessened with age. Interestingly, in an Australian national survey of mental health and well-being (ages 45-79; N=4,189), Butterworth, Gill, Rodgers, Ansety, Villamil, and Melzer (2006) found that as age increased, the prevalence rates of depression and anxiety in both community-dwelling men and women tended to decline.

Depression and Cognitive Competence in the Elderly

Summary of the Literature

The relationship between depression and cognitive functioning in older adults has been examined extensively over the past twenty years. The interaction and overlap of depression and cognitive decline remains unclear. Early correlational studies of depression and cognitive functioning as referenced in Chi & Chou (2000) could not distinguish causes from consequences; therefore the nature of the relationship between cognitive decline and depression remained unclear. Geerlings, et al. (2000) identified recent studies (Bassuk, et al., 1998; Chen, Ganguli, Mulsant, & DeKosky, 1999; Yaffe, Blackwell, Gore, Sands, Reus, & Browner, 1999) that indicate a continued interest in whether depression in dementia is a cause or a consequence of the dementia process. Tilvis, Pitkala & Nevantaus (1998) and Kivela, Kongas-Saviaro, Kesti, Pahkala & Laippala (1994) also confirm that depression is strongly associated with comorbidity and cognitive deficits. Some people with dementia exhibit depressive symptoms (Kral, 1983; Emery & Oxam, 1992) and many studies showed that approximately 10% to 30% of patients with Alzheimer's type dementia have major depression (Greenwald, Kramer-Ginsberg, Marin, Laitman, Hermann, Mohs, & Davis, 1989; Wragg & Jeste, 1989). It

should be noted, however, that some patients with dementia showed depressive symptoms but were not clinically depressed (Burke, Rubin, & Morris, 1988; Cummings, 1989).

In addition, it was found by Forsell, Jorm, Fratiglioni, Gurt, & Winblad, (1993), that different categories of depressive symptoms manifested themselves at different stages of dementia. It is common, however, that mild cognitive impairment be found within the population of the clinically depressed elderly (Reynolds, Kupfer, Hoch, Stack, Houck, & Sewitch, 1986; Stoudemire, Hill, Morris, & Lewison, 1993).

Longitudinal studies of cognitive functioning and depression are rare and two important studies report inconsistent results. Dufouli, Fuhrer, Dartigues, & Alperovitch, (1996) in a study of French people aged 65 and older examined gender, education, age, depressive symptoms, and cognitive function over a three-year period. Their findings indicated that a high level of depressive symptomatology did not predict cognitive deterioration. Devanand, et al. (1996), however, assessed cognition and depression in 1,070 old people community-dwelling individuals and followed 478 elderly with no dementia at baseline, for several years. They found in follow-up interviews that depressed mood (assessed by depressed mood items from the Hamilton Rating Scale of Depression) at baseline was a significant predictor of dementia. This effect was still present after gender, education and language of assessment were controlled.

Chi & Chou's (2000) study of 260 Hong Kong Chinese older adults revealed that individuals with higher levels of depressive symptomatology had greater cognitive decline over a three-year period than those individuals with lower levels of depressive

symptomatology. Their findings are consistent with previous correlational research showing that cognitive functioning and depression in the elderly are associated (Scherr, Albert, Funkenstein, Cook, Henneken, Branch, White, Taylor, & Evans, 1988; Fuhrer, Antonucci, Gagnon, Dartigues, Barberger-Gateau, & Alperovitch, 1992; Poon, 1992; Emery & Oxam, 1993; Bassuk, et al, 1998; Chen et al, 1999). Chi & Chou's (2000) findings are consistent with Devanand, et al. (1996), but inconsistent with Dufouli, et al. (1996) or Henderson, et al. (1997) as their findings show that depression at baseline did not predict cognitive deterioration over a period of three years.

The relationship between cognitive impairment and depression in older adults has been a topic of considerable misunderstanding. It is now generally accepted that mild depression has little or no major impact on most cognitive functions (Bieliauskas, 1993). The two most common explanations for the occurrence of depression in Alzheimer's type dementia patients are 1) as a psychological reaction to the perception of cognitive decline (Migliorelli, Teson, Sabe, et al, 1995) and that 2) depression is an early symptom of the neurological process of the disease (Geerlings, Schoevers, Beekman, Jonker, Deeg, Schmand, Ader, Bouter, & van Tilburg, 2000). Complaints of memory loss would modify the association between depression and Alzheimer's disease because it possibly reflects realistic self-report of cognitive decline (Geerlings, et al., 1999). It has been suggested in studies of neurochemical changes in the brains of people with Alzheimer's-type disease that they may be more susceptible to developing depressive disorders, and that the dementing process may contribute to depression

(Zubenko & Moossy, 1988; Zweig, Ross, Hedreen, et al., 1988; Forstl, Burns, Luthert, et al., 1992).

Summary

This study was undertaken to further elucidate the interrelationships between cognitive competence, anxiety, obsessive-compulsive behaviors as a measure of anxiety, and depression in the elderly. While these concepts have been studied independently, few studies have examined the possibly complex interrelationships amongst these variables. The purpose of this study was to explore the relationship of these variables to depression in an elderly sample from the CASE (2001) data.

CHAPTER III

METHODOLOGY

This chapter includes a description of the sample of the present study. Information regarding data collection procedures, measures, and data preparation is then presented.

Participants

The population from which the experimental sample was drawn was the Clinical Assessment Scales for the Elderly (CASE, 2001) Data Normative Sample. The participants are the 1,000 individuals who completed the Form S (Self-Report) and the 1,000 individuals who completed the Form R (Other Report) for the CASE data sample. The mean education of Form S participants was 14.12 years and the mean education of Form R participants was 13.5 years. The standardization sample was recruited in order to accurately reflect the demographics of the United States as established by the 1998 Census. Demographic variables are presented in Table 1.

In addition, the authors took ethnicity, clinical setting, cultural, and gender biases into account during the creation of this instrument. Because the CASE is designed for

use with clinical populations, Chapter Five of the Professional Manual for the CASE and CASE-SF (Short Form) (2001) presents correlations for CASE Form S with the Beck Depression Inventory (BDI), the Beck Hopelessness Scale (BHS), and the State-Trait Anxiety Inventory. These results are presented on page 44 of the Professional Manual. Intercorrelations for the CASE Form S Clinical scales and the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) Basic Clinical scales and Validity scales were also performed and are presented on page 46. Additionally, intercorrelations for the CASE Form R and the Cognitive Behavior Rating Scale (CBRS) were included on page 47 in the Professional Manual.

Procedures

Data collection for the CASE has been described elsewhere (Professional Manual for the CASE and CASE-SF, 2001). Briefly, the standardization sample was created to mirror the elderly population in the US as documented by the 1998 census.

Table 1

Descriptive Characteristics of the Total CASE Normative Sample

Demographic Variable	Form S	Form R
Sample		
N	1,000	1,000
Education (years)		
M	14.12	13.50
SD	3.77	3.73
Gender		
Male	44.1%	44.8%
Female	55.8%	55.2%
Ethnicity		
Caucasian	83.8%	81.9%
African American	7.7%	8.4%
Hispanic	6.9%	7.2%
Other	1.6%	2.5%
Age Group		
55-59 years	14.6%	15.0%
60-64 years	14.7%	15.9%
65-69 years	14.5%	15.5%
70-74 years	14.7%	14.4%
75-79 years	14.9%	14.1%
80-84 years	13.2%	12.8%
85-90 years	13.0%	12.3%
Geographic Region		
Northeast	20.7%	13.3%
Midwest	23.5%	28.2%
West	20.6%	19.9%
South	34.2%	38.3%

Note. Adapted from Professional Manual for the CASE and CASE-SF, C.R. Reynolds, 2001, p. 34.

Measures / Instrumentation

The reliability coefficients and validity for the four scales are presented in the table on page 28.

Depression Scale

The Depression Scale (DEP) from the CASE "is designed to assess indications of depressed mood, general dysthymia, sadness, melancholy, feelings of helplessness, fatigue, and some cognitive symptoms that may accompany major depressive episodes. External locus of control is common particularly among older examinees" (p.20).

Cognitive Competence Scale

The Cognitive Competence Scale (COG) from the CASE "is designed to assess impairments of higher cognitive processes such as reason, attention and concentration, memory, and logical thought" (p.19).

Anxiety Scale

The Anxiety Scale (ANX) from the CASE "is designed to assess a generalized sense of apprehension, a vague sense of fear and related irrational beliefs, worry, nervousness, and related general symptoms of anxiety and anxiety-related disorders" (p.19).

Obsessive Compulsive Scale

The Obsessive Compulsive Scale (OCD) from CASE "is designed to assess the tendency to engage in non-productive, ruminative thought patterns with focused patterns of irrational worry and related phenomena" (p.22).

Data Preparation / Missing Data

For purposes of imputation the data from a matched subset of 123 self- and other-report questionnaires were utilized in the present study. The data from the self- and

other-report cognitive competence, self-and other-report depression, self- and other-report anxiety, and self- and other-report obsessive compulsive behaviors was transformed in natural logarithm and summarized. Observed data was used to predict that the data should be like with included error. It was determined that 168 was the minimum number of iterations and a data set was generated.

CHAPTER IV

RESULTS, RESEARCH QUESTIONS, AND CLINICAL IMPLICATIONS

This chapter presents the data analyses conducted for the present study. Descriptive characteristics of the sample and the extent to which the data fit the proposed model will also be presented. Data are presented to further illuminate the relationship among and between the variables examined. Reports of the data analysis are presented in relation to research hypotheses and research questions. In addition, the clinical implications of the results will be discussed.

Preliminary Analyses

Scale Reliability

Cronbach's alpha, item total correlations, and validity measures from the original normative sample are presented in Table 2 and were averaged across seven age groups in the normative sample. Internal consistency was excellent for all variables; Self-Report Cognitive Competence (SFCOG), Other-Report Cognitive Competence (RFCOG), Anxiety (ANX), Obsessive-Compulsive behavior (OCD), and Depression (DEP).

Descriptives and Correlations

Data for the current project was derived from a subset of 123 pairs of matched self-report and other-report questionnaires from the original 2,000 participant Clinical Assessment Scales for the Elderly (CASE) normative study sample. The number of identified males is 46, and the number of identified females is 38. The ethnicity of the subset that is included in the data is 98.7% Caucasian. The age range for the subset is from 55-90 and the educational level achieved is from eight to twenty-one years. Means and Standard Deviations for the observed subset variables did not systematically differ from the normative sample. The confirmation of the convergent and discriminant validity of the scales is shown by correlations between CASE Form S and Form R Scales in Table 3.

The correlation matrices for the data input and the extensive model fit summary will be presented later. All latent variable path estimates were said to be significant at the $p<0.05$ level for the data analyses. These data served as input data for all of the structural equation modeling analyses.

Table 2

Average Scale Reliability and Validity Indices

Measure (SEM)	Cronbach's Alpha	Standard Error of Measure
ANX		
Form S	0.93	2.69
Form R	0.93	2.58
COG		
Form S	0.94	2.52
Form R	0.95	2.14
DEP		
Form S	0.93	2.70
Form R	0.96	2.07
OCD		
Form S	0.87	3.65
Form R	0.90	3.32
Validity		
F		
Form S	0.85	3.00
Form R	0.92	3.00
L		
Form S	0.52	7.00
Form R	0.55	6.00

Note. Adapted from CASE Professional Manual, p.40-41, (2001).

Table 3

Correlations between CASE Form S and Form R Scales

	Form S		Form R		
Scale	Mean	Standard Deviation	Mean	Standard Deviation	Correlation
Clinical					
ANX	42.47	13.07	31.56	9.53	.33**
COG	58.40	15.78	44.57	14.02	.36**
DEP	33.58	9.24	43.45	11.67	.60**
OCD	27.81	8.26	25.94	8.02	.21**
Validity					
F	52.54	10.05	30.35	5.50	.19
L	29.62	3.72	26.62	3.75	.28**
V	6.76	2.22	7.40	2.73	.27**

*Note. N=123 pairs of tests. **p<.01. Adapted from CASE Professional Manual, p.62, (2001).*

Primary Analyses

Anderson and Gerbing (1988) recommended a two-step approach to the analysis of structural equation models (SEM). The measurement model was tested with a confirmatory factor analysis to determine if the model had an acceptable fit to the data. After the acceptable model was determined, the structural model was then tested. SEM was used to evaluate the research questions and to test the hypothesized model. Data were analyzed using AMOS 7.0 (Arbuckle & Wothke, 1999) with maximum likelihood (ML) estimations used to estimate all models.

Structural model fit was based on several indices appropriate for counseling psychology research and for studies with large sample sizes (Bentler & Bonnet, 1980; Joreskog & Sorbom, 1993; Quintana & Maxwell, 1999). These indices are the chi-square

statistic, the Goodness-of-Fit index (GFI), the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and the Bayesian Information Criterion (BIC). In the present study, a GFI value of >= 0.90 (Tabachnick & Fidell, 1996), CFI and TLI values of >= 0.95 and an RMSEA value of 0.06 (Hu & Bentler, 1999) were considered indicative of good model fit. For additional verification of model fit, the Incremental Fit Index (IFI) with a result of 0.99, was included for review.

The overall goodness-of-fit statistics indicated that model fourteen provided a good fit to the data (GFI= 0.967, TLI= 0.980, CFI= 0.991, IFI= 0.992, RMSEA= 0.059, chi-square = 17.177 (12), p-value (RMSEA < 0.05) = 0.143, BIC=132.670). The model exceeded or trended toward criteria for each fit index, indicating a close fitting model. While chi-square is reported, it is not a good indicator for evaluating overall fit of the model because the goodness of fit is based on the omitted paths thereby producing an overly restrictive test. In addition, goodness of fit is also influenced by sample size (Bentler & Bonnet, 1980; Quintana & Maxwell, 1999).

Interpretation of the RMSEA has been defined within the range of 0 = an exact fit and >0.10 = a poor fit (Brown & Cudeck, 1993 in Quintana & Maxwell, 1999); therefore, the observed RMSEA value of 0.059 indicate a mediocre to good fit for the data. The CFI and GFI indices, which are above 0.90, are indicators of a close-fitting model (Joreskog & Sorbom, 1993). See Table 3 for Chi-Square and Fit Indices. The endogenous (dependent) variables of DEP, ANX, and OCD are predicted by the

exogenous (independent) variables of: Self-Report Cognitive Competence (SFCOG), Other-Report Cognitive Competence (RFCOG), and AGE.

The BIC (Schwartz, 1978), as extended from the Bayes Factor (Jeffreys, 1935), allows for the comparison of any two models in an explanatory framework without requiring a nesting of models. The BIC also allows approximation of the Bayes Factor with the smaller value being indicative of a better fit. The observed BIC = 132.670 for Models 2 and 3, as well as the smaller chi-square of 17.177 are indicators that the model is a good fit.

For purposes of imputation the data for SFCOG, SFDEP, SFANX, and SFOCD was transformed in natural logarithm and summarized. Observed data was used to predict what the data should be like with included error. It was determined that 168 was the minimum number of iterations and a data set was generated.

Structural Models

Two structural models were tested with AMOS 7.0. The first model tested was the factor model. This first was the proposed model that included two observed, exogenous (independent) variables: SFCOG, and RFCOG. The six observed, endogenous (dependent) variables were: RFANX, SFANX, SFOCD, RFOCD, RFDEP, and SFDEP. This model was built on the following assumptions: a) SFCOG is correlated with RFCOG, b) SFCOG is correlated with DEP, c) SFCOG is correlated with OCD, d) RFCOG is correlated with DEP, e) RFCOG is correlated with OCD, f) DEP is correlated with RFDEP, g) DEP is correlated with SFDEP, h) OCD is correlated with RFOCD, and i) OCD is correlated with SFOCD. It was found through the AMOS statistical software

program that the first model could not address the construct of ANX and did not fit as a factor model because of an excessive error rate.

The second model tested explored the interrelationship of the variables. Results tables of the modeling are given later. This model was built on the following assumptions: a) SFCOG and SFCOG are correlated, b) SFCOG is correlated with SFANX, c) SFCOG is correlated with SFDEP, d) SFCOG is correlated with SFOCD, e) SFCOG is correlated with RFDEP, f) RFCOG is correlated with RFANX, g) RFCOG is correlated with RFDEP, h) RFCOG is correlated with RFOCD, i) RFOCD is correlated with RFDEP, j) RFOCD is correlated with RFANX, k) RFDEP is correlated with RFANX, l) SFDEP is correlated with SFANX, and m) SFDEP is correlated with SFOCD. Stated differently, a correlation of SFCOG and RFCOG, direct paths from SFCOG to SFANX, from SFCOG to SFDEP, from SFCOG to SFOCD, from SFCOG to RFDEP, from RFCOG to RFANX, from RFCOG to RFDEP, from RFCOG to RFOCD, from RFOCD to RFDEP, from RFOCD to RFANX, from RFDEP to RFANX, from SFDEP to SFANX, and from SFDEP to SFOCD, were estimated. The modification indices supported this progression of model development.

The best fitting model was the second model. All latent variable path estimates were significant at the $p<0.001$ level. In addition, covariances of SRCOG and RFCOG, $t(121)=5.09$, $p=0.05$ (two-tailed); SFDEP and RFDEP, $t(121)=5.24$, $p=0.05$ (two-tailed); SRANX and RFANX, $t(121)=5.34$, $p=0.05$ (two-tailed); and SFANX and SFDOCD, $t(121)=3.02$, $p=0.05$ (two-tailed) were statistically significant at the $p<0.05$ level because the *t*-critical value for an N of 121=1.960.

The addition of AGE as the only exogenous (independent) variable was the final model to be tested. The model with AGE added had (GFI= 0.391, TLI= 0.908, CFI= 0.951, IFI= 0.953, RMSEA= 0.112, chi-square = 48.094 (19), p-value (RMSEA < 0.05) = 0.253, and BIC= 173.211). The path from AGE to SFCOG was 0.089, $p> 0.05$, and to RFCOG was 0.145, $p>0.05$. This model was nested within the first model with added paths from AGE to SFCOG, and from AGE to RFCOG. This model was utilized to examine how well AGE mediates through COG. It was found that AGE does not predict COG with this sample. The modification indices suggested that the COG errors be correlated because AGE is included even though the paths are zero. Figures 2, 3, and 4 below identify the models.

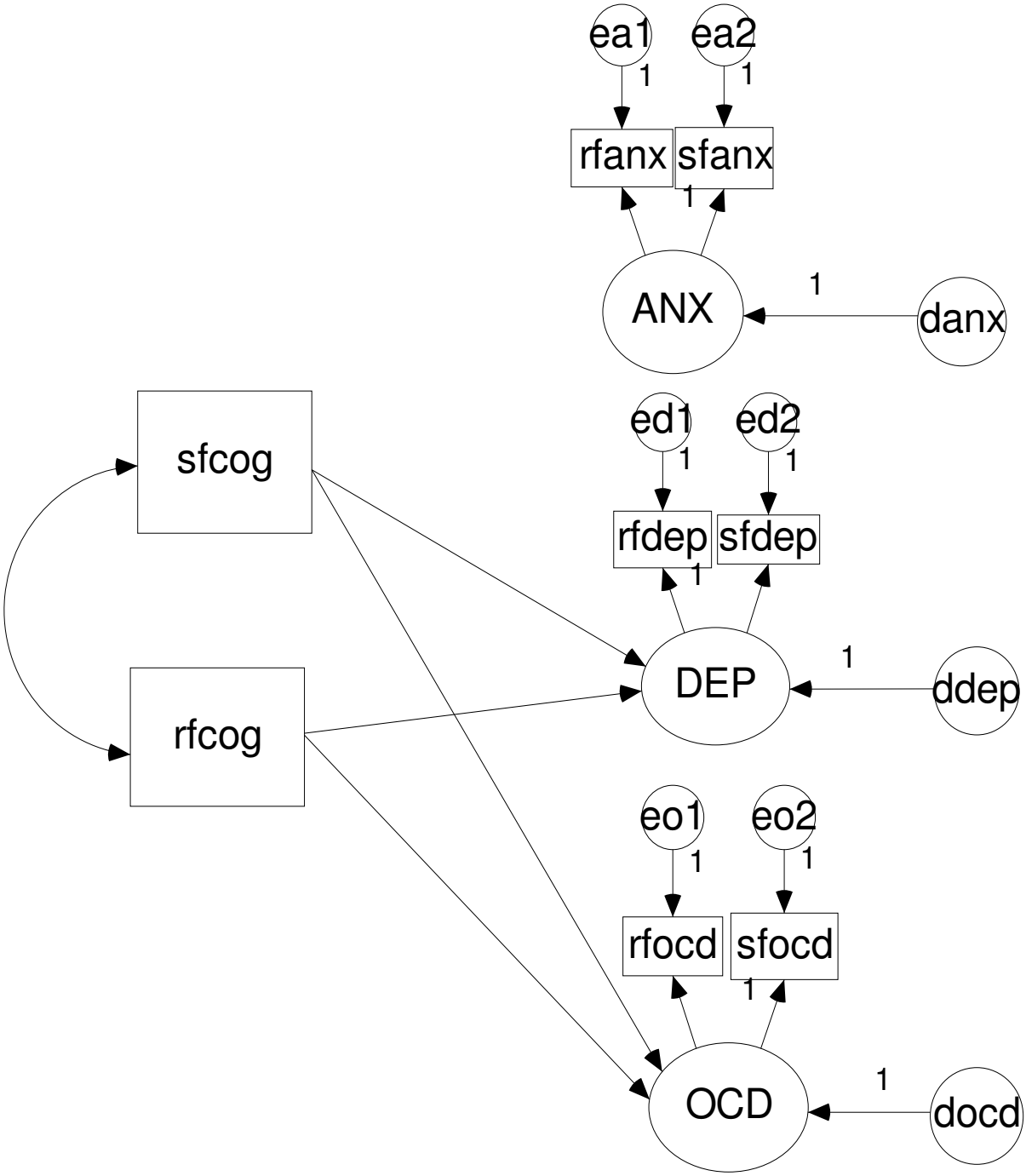

Figure 2. Factor Model (Model 1)

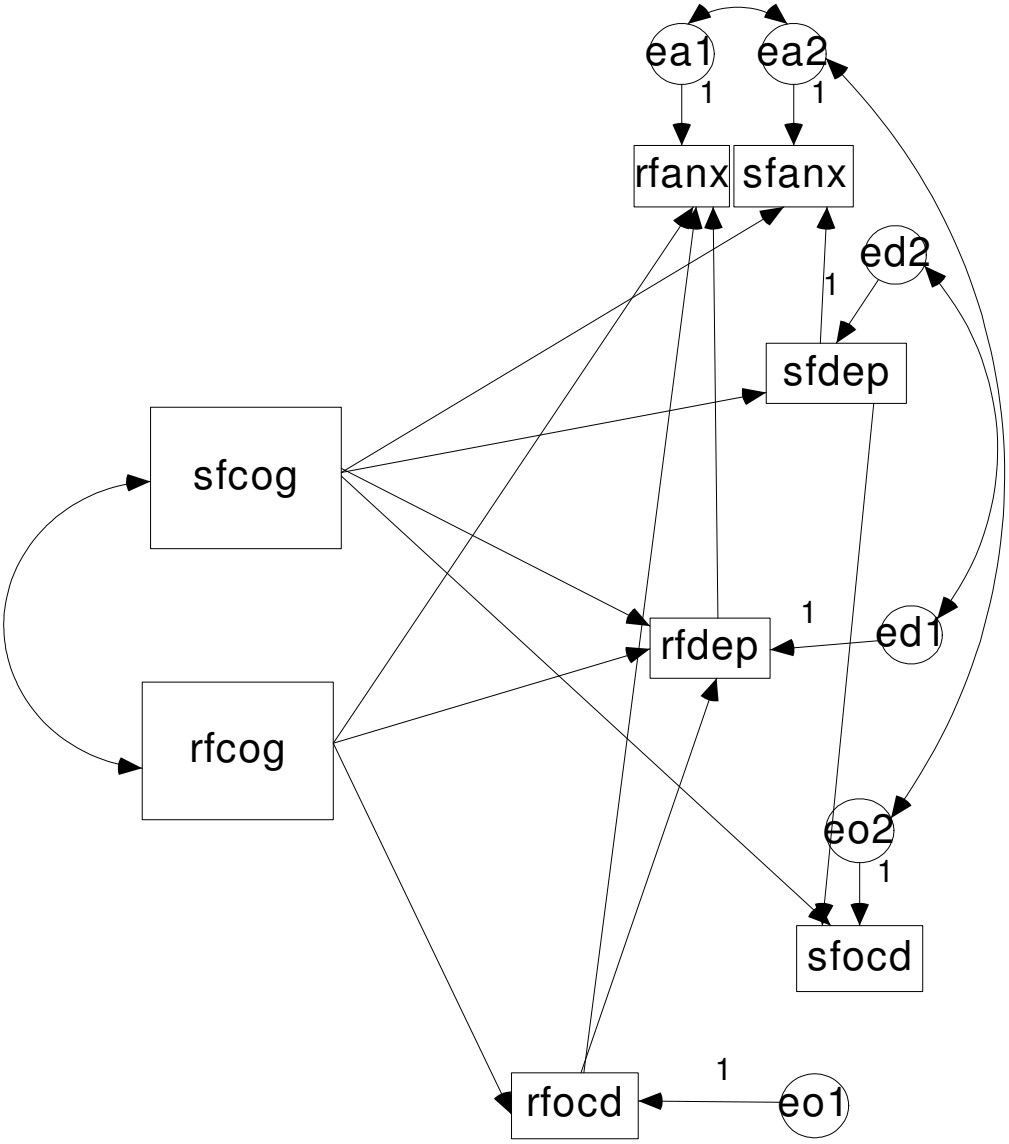

Figure 3. Model 2 Exploring Interrelationships of Variables.

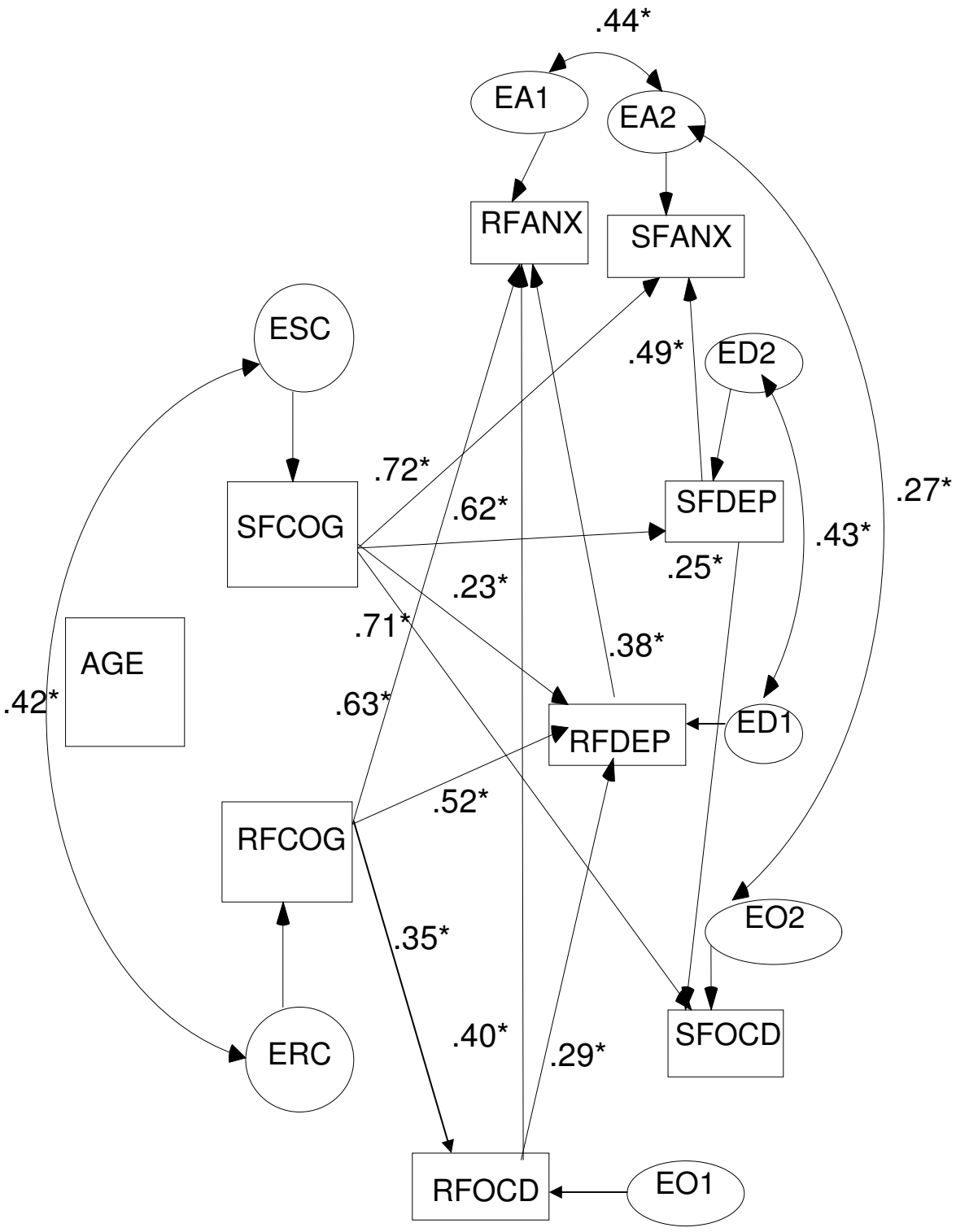

Figure 4. Model 2 Results with Standardized Total Effects and AGE Paths Held to 0.00.
Note. An asterisk (*) = a statistically significant path at the p<0.05 level.

The correlations matrices for the data input are presented in Tables 4, 5, 6, 7, 8, and 9 below. The extensive model fit summary is shown in Table 10.

Table 4

Regression Weights

	Estimate	S.E.	C.R.	P	Label
RFOCD <--- RFCOG	.202	.048	4.184	***	
RFDEP <--- SFCOG	.160	.049	3.263	.001	
SFDEP <--- SFCOG	.333	.038	8.684	***	
RFDEP <--- RFCOG	.355	.058	6.142	***	
RFDEP <--- RFOCD	.429	.093	4.600	***	
SFANX <--- SFCOG	.342	.050	6.890	***	
SFOCD <--- SFCOG	.273	.038	7.251	***	
RFANX <--- RFCOG	.236	.043	5.462	***	
RFANX <--- RFDEP	.321	.054	5.900	***	
SFANX <--- SFDEP	.755	.093	8.157	***	
RFANX <--- RFOCD	.372	.067	5.526	***	
SFOCD <--- SFDEP	.222	.070	3.182	.001	

Table 5

Standardized Regression Weights

	Estimate
RFOCD <--- RFCOG	.354
RFDEP <--- SFCOG	.228
SFDEP <--- SFCOG	.618
RFDEP <--- RFCOG	.417
RFDEP <--- RFOCD	.287
SFANX <--- SFCOG	.415
SFOCD <--- SFCOG	.562
RFANX <--- RFCOG	.328
RFANX <--- RFDEP	.381
SFANX <--- SFDEP	.494
RFANX <--- RFOCD	.294
SFOCD <--- SFDEP	.247

Table 6

Correlations of Covariance

	Estimate
ESC <--> ERC	.420
ED1 <--> ED2	.430
EA1 <--> EA2	.437
EA2 <--> EO2	.265

Table 7

Standardized Direct Effects

	RFCOG	RFOCD	SFCOG	SFDEP	RFDEP
RFOCD	.354	.000	.000	.000	.000
SFDEP	.000	.000	.618	.000	.000
RFDEP	.417	.287	.228	.000	.000
SFOCD	.000	.000	.562	.247	.000
SFANX	.000	.000	.415	.494	.000
RFANX	.328	.294	.000	.000	.381

Table 8

Standardized Indirect Effects

	RFCOG	RFOCD	SFCOG	SFDEP	RFDEP
RFOCD	.000	.000	.000	.000	.000
SFDEP	.000	.000	.000	.000	.000
RFDEP	.102	.000	.000	.000	.000
SFOCD	.000	.000	.152	.000	.000
SFANX	.000	.000	.305	.000	.000
RFANX	.302	.109	.087	.000	.000

Table 9

Standardized Total Effects

	SFANX	SFCOG	SFDEP	SFOCD
SFANX	-	.720	.494	-
SFCOG	.720	-	.618	.714
SFDEP	.494	-	-	.247
SFOCD	-	.714	.247	-

	RFANX	RFCOG	RFDEP	RFOCD
RFANX	-	.629	.381	.403
RFCOG	.629	-	.518	.354
RFDEP	.381	.518	-	.287
RFOCD	.403	.354	.287	-

Table 10

Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	25	27.939	20	.111	1.397
Saturated model	45	.000	0		
Independence model	9	634.943	36	.000	17.637

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	6.593	.954	.897	.424
Saturated model	.000	1.000		
Independence model	53.658	.395	.244	.316

Table 10 Continued.

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.956	.921	.987	.976	.987
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	.556	.531	.548
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

NCP

Model	NCP	LO 90	HI 90
Default model	7.939	.000	26.013
Saturated model	.000	.000	.000
Independence model	598.943	520.904	684.407

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	.229	.065	.000	.213
Saturated model	.000	.000	.000	.000
Independence model	5.204	4.909	4.270	5.610

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.057	.000	.103	.374
Independence model	.369	.344	.395	.000

Table 10 Continued.

AIC

Model	AIC	BCC	BIC	CAIC
Default model	77.939	82.404	148.244	173.244
Saturated model	90.000	98.036	216.548	261.548
Independence model	652.943	654.550	678.253	687.253

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	.639	.574	.787	.675
Saturated model	.738	.738	.738	.804
Independence model	5.352	4.712	6.053	5.365

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	138	165
Independence model	10	12

The purpose of this study sought to assess the relationships between cognition, depression, and anxiety among the elderly. This study investigated the impact of anxiety, obsessive-compulsive behaviors, and depression on matched sets of self-and other-report of cognitive competence. In the current study, data of the CASE (2001) Self-Report Cognitive Competence (SFCOG), Other-Report Cognitive Competence (RFCOG), Anxiety (ANX), Obsessive Compulsive behavior (OCD), and Depression

(DEP) scales were evaluated. The findings of the study will be discussed in relation to the research questions presented in Chapter I along with their clinical applications.

Research Questions and Clinical Implications

Research Question 1: What is the relationship between age and cognitive competence?

The results of the data analysis suggest that AGE is unrelated to cognitive competence or impairment for this sample. The model data revealed that a medium effect (0.42) exists between the errors of SFCOG and RFCOG suggesting that advancing age is not (automatically) indicative of cognitive decline. While deterioration of cognitive tasks is well documented as people age, (Schaie, 1983; Schaie & Willis, 1993), individual differences are the rule and not the exception (Schaie, 1990). In a clinical setting, knowing that there is not an age effect with this self-report is important because it emphasizes the fact that corroborating evidence, from the other-report as well as other informants if possible is important when working with an elderly population. The results provide evidence that the patient may not have cognitive decline and may be the best historian to describe how they are feeling. Allowing the opportunity for a more comprehensive interview of the patient to rule out potential stressors affecting cognitive functioning would be beneficial. Alerting social work staff of the patient's potential need for assistance with case management would also be helpful if evidence of cognitive decline is found.

Research Question 2: What is the relationship between anxiety and obsessive-compulsive behavior with depression?

In this sample, the results for the self-report show a moderate effect (0.49) from SFDEP to SFANX and a small effect (0.25) from SFDEP to SFOCD. Interestingly it is the covariance of SFANX and SFOCD that indicate a small effect (0.27) rather than a direct effect. The RFDEP has a small effect (0.38) with RFANX. The relationship identified by the results is because OCD behaviors tend to be a byproduct of anxiety. For the purposes of this study, they are both indicators of anxiety.

Research Question 3: What is the relationship between cognitive competence and depression as mediated by anxiety?

This research question was included to see if a directional relationship between DEP and ANX could be identified. Contrary to the hypothesis, the relationship identified between both SFCOG and SFANX is mediated by SFDEP. RFCOG and RFANX are also mediated by RFDEP. The results of the analysis of this sample indicate that the direction is from DEP to ANX as identified by the modification indices when they were modeled by AMOS 7.0. These results are consistent with the current literature, which agrees that depression and anxiety are highly related (e.g., Blazer, et al., 1987; Clark & Watson, 1991; Fernandez, et al., 1995; and Barbee, 1998).

Research Question 4: What is the relationship between:

a. Self-report cognitive competence and other-report cognitive competence?

b. Self-Report Depression and other-report depression?

c. Self-Report Anxiety and other-report anxiety?

d. Self-Report Obsessive-Compulsive behavior and other-report obsessive-compulsive behavior?

As reported in Table 3, the CASE Professional Manual has addressed the correlations between the Self- and Other-Report instruments. The correlations for ANX, OCD, DEP, and COG are all statistically significant. The data from the patient self-report could be a good assessment of the internal functioning of the patient, while the other-report will better reflect the observations and somatic complaints of the patient. The internal world of the patient is what we seek to understand with this instrument and self-report has remained the best form for gathering psychological information. An example will assist in illustrating this concept. If a patient is reporting higher anxiety on the CASE Form S than what the corroborator reported on the CASE Form R, the difference in the reports must be investigated further in order to ascertain whether the patient or the corroborator has a more accurate perception of the patient's situation. We do not doubt that the patient is distressed. The information gathered from the corroborator, however, will help to illuminate to what extent the patient is distressed, and provide important clues to the health care practitioner as to appropriate interventions in order to best assist the patient.

Obtaining multiple other-report questionnaires would be ideal for the treatment team in order to have corroborating data when a cognitive decline is suspected. With that in mind, having an instrument, such as the CASE-SF (short form), available would make a valuable addition to the clinical settings current psychological measures. Requesting that close relatives and close friends of the patients fill out the questionnaire would be beneficial to the treatment team. The brevity of the instrument allows for minimal inconvenience on the part of the person completing the form and also gives the

psychologist the ability to quickly score it, offering quick turnaround time for answering questions regarding the current functioning of a patient.

In addition, the data could be indicative of possibly over-reporting symptomatology by the patient for perceived secondary gain. Secondary gain is an important consideration when working with the elderly. Depending on their prior experiences with clinical settings, it is not uncommon for elderly patients to not feel "listened to" by the medical team and psychologist unless they have what the team considers being severe symptoms. While this eliciting response is clinically informative to the psychologist, it should not be dismissed by the rest of the interdisciplinary treatment team. Addressing patient concerns remains the primary function of all health care professionals regardless of severity.

Research Question 5: What is the relationship between:

d. Self-report cognitive competence and self-report depression?
e. Self-report cognitive competence and self-report anxiety?
f. Self-report cognitive competence and self-report obsessive compulsive behavior?
g. Other-report cognitive competence and other-report depression?
h. Other-report cognitive competence and other-report anxiety?
i. Other-report cognitive competence and other-report obsessive-compulsive behavior?

The strength of the self-report relationships with depression, anxiety and obsessive-compulsive behaviors may support that this self-report form is a good

predictor of cognitive functioning of the individual. It is also indicative that the patient completing the form is capable of clearly expressing psychological and physiological distress over a period of time. This information is useful to the treatment team in their assessment of the patient's functioning. It is also important in that it allows the patient to remain an integral part of the direction taken by the treatment team.

The other-report measures appear to be good measures of reporting on an observed patient in the areas of depressive and anxious symptoms. The data reveals a small effect for the relationship of ORCOG and OROCD which could be indicative of an inability of the observer to fully comprehend the extent of the patient's OC behaviors as they may be internalized and therefore unobservable.

Research Question 6: What is the pattern of interrelationships among the variables?

The overall pattern of the variables are statistically significant and show moderate to strong interrelationships as was dictated by the modification indices during the assessment of model fit. As mentioned in the previous research question, the weakest, yet statistically significant relationships were from other-report with OCD. Supportive of the literature is the result that AGE is not correlated to cognitive competence in the elderly. Individual differences in an elderly person's cognitive abilities are the rule rather than the exception (Schaie, 1990).

As shown in Figure 4, there was a very strong relationship between SFCOG and SFANX (0.72), SFCOG and SFDEP (0.62), and SFCOG and SFOCD (0.71). Smaller, yet statistically significant effects were found between RFCOG and RFANX (0.63), RFCOG and RFDEP (0.52), and RFCOG and RFOCD (0.35). These results allow

us to see that the self-report measure still seems to be the best indicator of patient functioning. As mentioned previously, the internal world of the patient is unknowable to the observer; hence the severity of symptomatology from the other-report will not exactly match the self-report.

Interestingly, several correlations were found to have mediating effects. The data reports that RFOCD mediates the relationship between RFCOG and RFOCD (0.35) and RFOCD and RFDEP (0.29). SFDEP mediates the relationships between SFCOG and SFDEP (0.62) and SFDEP and SFOCD (0.25) as well as the correlation between SFDEP and SFANX (0.49). The relationships are mediated because RFOCD and SFDEP are dependent variables. Mediating variables can be either independent or dependent variables depending on the relationship being tested. Moderating relationships however, are identified by moderator variables always functioning as independent variables. In order to be a mediating or moderating variable, the results must also be statistically significant (Baron & Kenny, 1986).

The results from the correlations between SFANX and SFDEP as well as RFANX and RFDEP confirm the current literature regarding depression and anxiety which is that they are highly correlated (e.g., Clark & Watson, 1991; Lovibond, 1998; Beekman, 2000; Kessler, et al., 2003; Biringer, Mykletun, et al., 2005), and occur in late life (Salzman, & Liebowitz, 1991; Kirby et al., 1997). By examining SFOCD and RFOCD as an additional measure of anxiety this study has added to the current literature regarding anxiety and depression in the elderly. Specifically, during an assessment of a patient, observing obsessive-compulsive behaviors as well possibly administering an

instrument that will measure obsessive-compulsive behaviors may allow for a more rapid diagnosis of an anxiety disorder which may lead to a diagnosis of depression. Until now, obsessive-compulsive behaviors in the depressed elderly have not been investigated. Future research should include measures of obsessive-compulsive behaviors because these outward measures of distress can be compared to the internal measures of distress thus allowing us to make a more accurate diagnosis of the patient. As indicated by the disparity between SFCOG to SFOCD (0.71) and RFCOG to RFOCD (0.35) however, more careful observation of the patient on the part of the caregiver/observer may be warranted.

As mentioned above, the results of this study are consistent with the larger corpus of literature. A clinician should understand and evaluate multiple facets of the presentation of depression in the elderly. Inquiring about and remaining aware of OC behaviors as a measure of anxiety is important during assessments of elderly patients for depression. Understanding this presentation of depression, in conjunction with collaborative information from observers is necessary in order to correctly diagnose and treat the patient.

The clinician who works with elderly patients with anxiety should explore whether or not depression is the root cause of the patients' distress. In addition, when examining patients the observant clinician may detect obsessive-compulsive behaviors during the diagnostic interview that may lead to a more rapid diagnosis of depression.

The inclusion of OCD in this study adds to our understanding of the presentation of, as well as the potential verification of, depression in the elderly. The results confirm

personal anecdotal accounts of working with distressed elderly in clinical settings. Psychopharmacological inventions for anxiety and depression through consultation with primary care physicians may also be warranted.

CHAPTER V

CONCLUSIONS

The purpose of this study sought to assess the relationships between cognition, depression, and anxiety among the elderly. This study investigated the impact of anxiety, obsessive-compulsive behaviors, and depression on matched sets of self-and other-report of cognitive competence. In the current study, data of the CASE (2001) Self-Report Cognitive Competence (SFCOG), Other-Report Cognitive Competence (RFCOG), Anxiety (ANX), Obsessive Compulsive behavior (OCD), and Depression (DEP) scales were evaluated. This chapter is divided into two sections. The first section discusses limitations of the present study. The second section discusses recommendations for future research.

Limitations of the Present Study

There are several limitations of this study that should be considered when interpreting the results. All results should be interpreted with caution, as the following limitations may involve possible threats to external validity (Cook & Campbell, 1979; Heppner, Kivlighan & Wampold, 1992). A limitation of this study is that the data relied upon was from a self-report measure. Self-report measures are subject to the possibility of limited self-awareness, the possibility of malingering, and possible impression management both by the person completing the CASE Form S and by the observing person filling out the CASE Form R.

In filling out Case Form R, the observer may not be aware of the motivations of the observed person in addition to not being certain of what they are observing. In

addition, completing these self- and other- reports may have caused evaluation apprehension, a threat to construct validity of putative causes and effects.

The threat to external validity is the generalizability of the results. Generalizability of the results from this study is uncertain because this sample was an ethnically homogeneous subset of 123 participants with matched self- and other-reports instead of the original 2,000 participants of the standardization sample which "had been a population-proportionate stratified random sample of the English speaking U.S. residents between the ages of 55 years and 90 years" (CASE Professional Manual, 2001, p.33). The results from a larger sample of the data set would allow for globally reflective answers to the research questions asked in this study regarding cognitive competence, anxiety, and depression in the elderly of the United States.

Recommendations for Future Research

Through the analysis of possible relationships, a direction for future research in this area can be identified. The Structural Equation Model presented in this study supported the importance of identifying relationships between COG, ANX, DEP, and OCD in an elderly sample. The results indicate that in a clinical setting, patients are able to identify psychological and physiological concerns that need to be addressed by interdisciplinary treatment teams. Cross validation of these results using additional samples would be beneficial.

Future research utilizing the data from the CASE variables may also wish to include the Mania scale, the Somatization scale, and the Substance Abuse scale in order to identify additional areas of concern for elderly patients. I would suggest using the

Mania scale because it can be another confirmation of the anxiety and obsessive-compulsive behaviors of the patients. The Somatization scale could be useful in identifying elderly patients who are in need of help for depression, but not able to verbalize it because of social norms for their age group or other factors. Investigating the Substance Abuse scale would also be helpful for future research with the elderly. Because it is not uncommon for elderly patients to self-medicate due to their age group's social norms, addressing the issue of substance abuse through this measure may identify additional patients in need of assistance with depression.

More empirical research examining elderly life issues is needed. The research on issues of aging populations is limited. Developing an understanding of the predictors of depression, especially the ones to be considered malleable (e.g., Anstey, et al., 1993; Avolio & Waldman, 1994), as well as the outcomes, would be good contributions to the literature.

Longitudinal studies utilizing the CASE would be helpful in determining the breadth of usefulness of this instrument. Studies over time would allow for research into possibly generalizable changes in the reporting of behaviors over time as well as generations.

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